

Nalco Docket No. 7668

OFFICIAL

REMARKS

This is in reply to the Office Action mailed February 28, 2003 (Paper No. 4).

Claims 1-7 are currently pending.

Claims 1-7 are rejected under 35 U.S.C. § 103(a) over one of Patent No. 6,517,723 ("Daigger"), 5,932,099 ("Cote") or 5,914,040 ("Pescher").

No new matter is added by this amendment.

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OFFICIAL**DISCUSSION****The Rejection of Claims 1-7 under 35 U.S.C. § 103(a) over Daigger, Cote or Pescher**

Claims 1-7 are rejected under 35 U.S.C. § 103(a) over Daigger, Cote or Pescher.

Applicants respectfully traverse this rejection.

Applicants respectfully assert that Daigger discloses a method of clarifying wastewater where the wastewater is first treated in a bioreactor containing an activated sludge and then is filtered through an immersed membrane filter, treated with oxygen and then recycled back through the bioreactor. The wastewater exiting the bioreactor then enters a second treatment tank and is treated with powdered activated carbon (PAC) and optionally an unspecified coagulant and/or oxidant. Finally, the water is filtered through a membrane filter. Water exiting the second treatment tank is not returned to the bioreactor. Col. 3, lines 12-30 and Figs. 1 and 2.

Applicants respectfully assert that Daigger does not disclose adding any coagulating agent to the activated sludge contained in the bioreactor. Nor does Daigger identify any particular coagulants or suggest anywhere that the coagulants may be used in the bioreactor. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1-7 under 35 U.S.C. § 103(a) over Daigger.

Applicants respectfully assert that Cote does not concern treatment of wastewater, but rather a method of purifying drinking water obtained from underground or surface sources. Col. 1, lines 9-11. Furthermore, as is the case with Daigger, Cote does not disclose addition of a coagulant to the activated sludge in a membrane bioreactor or the use of cationic polymer coagulants.

In the treatment method of Cote, the water is pretreated with an inorganic coagulant (aluminum polychloride, aluminum sulfate, ferric chloride, etc) and then is sent to a clarifier where it undergoes sedimentation. The sludge from the clarifier is removed and the clarified water is treated in the membrane bioreactor. Col. 6, lines 32-53. Thus, Cote teaches a process in which an inorganic coagulant is added in a pretreatment step that is followed by a clarification step where the inorganic coagulant is removed along with the sludge in the clarifier unit before the treated water enters the bioreactor. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1-7 under 35 U.S.C. § 103(a) over Cote.

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Finally, Applicants respectfully assert that Pescher concerns a specialized method of treating animal waste. In the method described by Pescher the waste is subject to a series of steps including (i) treatment with an oxidizing agent; (ii) treatment with at least one flocculating agent; (iii) treatment with at least one polyelectrolyte; and (iv) filtration to form a filter cake and a filtrate. The filtrate is optionally filtered through an ultrafiltration membrane. Abstract and col. 5, lines 64-67.

Pescher, therefore, does not concern an activated sludge process for the clarification of wastewater in a membrane reactor but rather recites a variation on the traditional method of treating wastewater with polymers. In the method described by Pescher, the polymers are added to the wastewater to coagulate/flocculate suspended solids and other organic material in the wastewater and then the coagulated/flocculated solids are separated from the clarified water by filtration. It is only after this first filtration operation that the clarified water is subjected to further clarification by ultrafiltration. As is the case with Cote, Pescher does not disclose a process where the coagulant is added to wastewater that is not subjected to a filtration step prior to contact with the microfiltration or ultrafiltration membrane. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1-7 under 35 U.S.C. § 103(a) over Pescher.

The Prior Art Made of Record

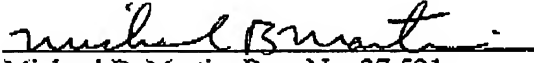
Patent Nos. 5,254,253 and 5,494,577 have been made of record. Applicants note that these patents concern bioreactor design and not use of polymers in membrane bioreactor systems.

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OFFICIAL**CONCLUSION**

As discussed above, Applicants respectfully assert that none of Daigger, Cote and Pescher, alone or in combination, teach or suggest addition of a cationic polymeric coagulant to the activated sludge in a membrane bioreactor. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1-7 under 35 U.S.C. § 103(a) over Daigger, Cote and Pescher and assert that this application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,


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